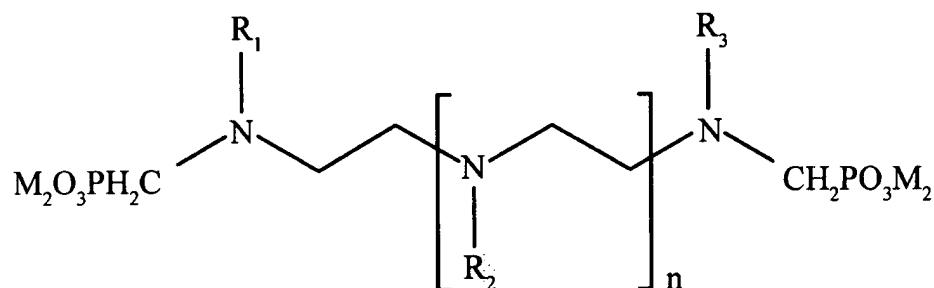


ABSTRACT

[0177]

In one embodiment, a scale inhibitor comprising at least one polymethylenephosphonate derivative having the following formula:



wherein n is a number, wherein M is hydrogen or a cation, wherein R₁, R₂, and R₃ are each independently selected from the group consisting of CH₂PO₃M₂, CH₂R₄, wherein R₄ is CHOHCH₃, CHOHCH₂Cl, or CHOHCH₂OH, (CH₂)_mSO₃M, wherein m is 3 or 4, and CH₂CH₂R₅, wherein R₅ is CONH₂, CHO, COOR₆, COOX, or CN, wherein R₆ is CH₃ or C₂H₅, and wherein X is an alkali metal or ammonium, and wherein at least one of R₁, R₂, and R₃ is not CH₂PO₃M₂. In another embodiment, a method for inhibiting scale formation in water, and in still another embodiment, a method for sequestering iron ions in a water systems, each of the methods comprising the step of providing the water with the above described polymethylenephosphonate derivative.